

## CLAIMS

1. A planar antenna assembly comprising a printed circuit board (PCB) (12) having a ground plane (16) and rf circuitry thereon, a patch antenna (10), means for mounting the patch antenna such that it is spaced from the ground plane, and a feed (36) for coupling the patch antenna (10) to the rf circuitry, the feed comprising components for reactively tuning the antenna by tuning a relatively lower frequency inductively and a relatively higher frequency capacitively.

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2. An antenna as claimed in claim 1, characterised in that the components comprise a series connected, parallel L-C network (42).

3. A communications apparatus comprising a housing (40) containing a printed circuit board (PCB) (12) having a ground plane (16) and rf circuitry thereon, a planar antenna (10) spaced from the ground plane, a dielectric (14) between the PCB and the planar antenna, and a feed (36) coupling the planar antenna (10) to the rf circuitry, the feed comprising components for reactively tuning the antenna by tuning a relatively lower frequency inductively and a relatively higher frequency capacitively.

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4. An apparatus as claimed in claim 3, characterised in that the components are carried by the planar antenna.

5. An apparatus as claimed in claim 3, characterised in that the components are mounted on the PCB.

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6. An apparatus as claimed in claim 3,4 or 5, characterised in that the antenna is a planar inverted-L antenna (PILA).

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7. An apparatus as claimed in any one of claims 3 to 6, characterised in that the components comprise a series connected, parallel L-C network (42).

5 8. An apparatus as claimed in any one of claims 3 to 6, characterised in that the components comprise a transmission line (54).

9. A rf module comprising a printed circuit board (PCB) (12) having a ground plane (16) and rf circuitry thereon, a planar antenna (10) spaced from the ground plane, a dielectric (14) in a space between the PCB and the planar antenna, and a feed (36) coupling the planar antenna (10) to the rf circuitry, the feed comprising components for reactively tuning the antenna by tuning a relatively lower frequency inductively and a relatively higher frequency capacitively.

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10. A module as claimed in claim 9, characterised in that the components are carried by the planar antenna.

11. A module as claimed in claim 9 or 10, characterised in that the components comprise a series connected, parallel L-C network (42).

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